

## Limit Alarms (rotary switch adj.) AL-UNIT

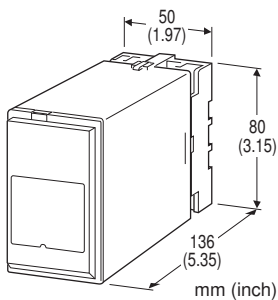
### ANGLE SENSOR ALARM

#### Functions & Features

- Providing SPDT relay outputs at preset voltage level provided from Angle Sensor (model: NRA)
- Dual (Hi/Lo) trip
- Energized or de-energized coil at a tripped condition selectable
- Rotary switch setpoint adjustments
- 50 % zero/span adjustments
- Enclosed relays
- Relays can be powered 110 V DC
- High-density mounting

#### Typical Applications

- Annunciator
- Various alarm applications



## MODEL: ALNR-[1][2][3]-[4][5]

### ORDERING INFORMATION

- Code number: ALNR-[1][2][3]-[4][5]
- Specify a code from below for each of [1] through [5].  
(e.g. ALNR-111-B/Q)
- Specify the specification for option code /Q  
(e.g. /C01/S01)

#### [1] ACTION

- 1: Direct (output increases with input increase)
- 2: Reverse (output increases with input decrease)

#### [2] SETPOINT 1 OUTPUT

- 1: Hi (coil energized at alarm)
- 2: Hi (coil de-energized at alarm)
- 3: Lo (coil energized at alarm)
- 4: Lo (coil de-energized at alarm)

#### [3] SETPOINT 2 OUTPUT

- 1: Hi (coil energized at alarm)
- 2: Hi (coil de-energized at alarm)
- 3: Lo (coil energized at alarm)
- 4: Lo (coil de-energized at alarm)

#### [4] POWER INPUT

##### AC Power

- B: 100 V AC
- C: 110 V AC
- D: 115 V AC
- F: 120 V AC
- G: 200 V AC
- H: 220 V AC
- J: 240 V AC

##### DC Power

- S: 12 V DC
- R: 24 V DC
- V: 48 V DC
- P: 110 V DC

#### [5] OPTIONS

- blank: none
- /Q: With options (specify the specification)

#### SPECIFICATIONS OF OPTION: Q (multiple selections)

##### COATING (For the detail, refer to M-System's web site.)

- /C01: Silicone coating
- /C02: Polyurethane coating
- /C03: Rubber coating

##### TERMINAL SCREW MATERIAL

- /S01: Stainless steel

#### RELATED PRODUCTS

- Brushless angle sensor (model: NRA)

#### GENERAL SPECIFICATIONS

**Construction:** Plug-in

**Connection:** M3.5 screw terminals

**Screw terminal:** Chromated steel (standard) or stainless steel

**Housing material:** Flame-resistant resin (black)

**Isolation:** Input to output 1 to output 2 to power

**Zero adjustment:** 0 - 50 % of linearity-assured range of the angle sensor (front)

**Span adjustment:** 50 - 100 % of linearity-assured range of the angle sensor (front)

**Setpoint adjustments:** 10-position rotary switches (front); 0 - 99 % independently; 1 % increments

**Hysteresis (deadband):** 0.7 - 2.5 %

**Front LEDs:** Red LED turns on when the coil is energized.  
(located behind the front cover)

**Power ON timer:** Relays de-energized for approx. 2 seconds after power is turned on.

**Response time:** Approx. 0.5 sec. (0 - 100 % at 90 % setpoint)

**Line voltage effect:**  $\pm 0.1$  % over voltage range

**Insulation resistance:**  $\geq 100$  M $\Omega$  with 500 V DC

**Dielectric strength:** 2000 V AC @1 minute (input to output 1 to output 2 to power to ground)

## INPUT SPECIFICATIONS

**Input:** 2 - 3 V DC (output from Angle Sensor)

**Excitation:** 5 V DC  $\pm 2$  %

## OUTPUT SPECIFICATIONS

■ **Relay Contact:** 100 V AC @ 1 A ( $\cos \phi = 1$ )

120 V AC @ 1 A ( $\cos \phi = 1$ )

240 V AC @ 0.5 A ( $\cos \phi = 1$ )

30 V DC @ 1 A (resistive load)

**Maximum switching voltage:** 380 V AC or 125 V DC

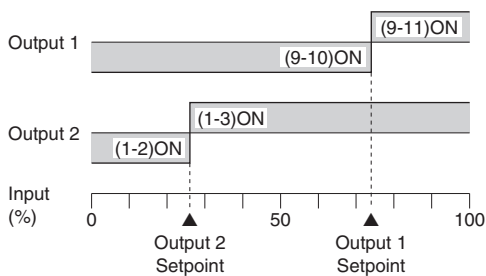
**Maximum switching power:** 120 VA or 30 W

**Minimum load:** 5 V DC @ 10 mA

**Mechanical life:**  $5 \times 10^7$  cycles

For maximum relay life with inductive loads, external protection is recommended.

### Alarm Trip Operation Terminal No. in parentheses



### Trip Operation in Power Failure

- **Output Code: 1 & 4:** Terminals 1 - 2, 9 - 10 turn ON
- **Output Code: 2 & 3:** Terminals 1 - 3, 9 - 11 turn ON

## INSTALLATION

### Power input

- **AC:** Operational voltage range: rating  $\pm 10$  %, 50/60  $\pm 2$  Hz, approx. 2 VA
- **DC:** Operational voltage range: rating  $\pm 10$  %, or 85 - 150 V for 110 V rating (ripple 10 % p-p max.) approx. 2 W (80 mA at 24 V)

**Operating temperature:** -5 to +60°C (23 to 140°F)

**Operating humidity:** 30 to 90 %RH (non-condensing)

**Mounting:** Surface or DIN rail

**Weight:** 370 g (0.82 lb)

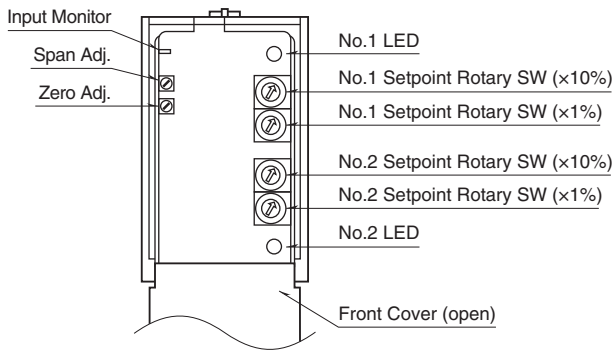
## PERFORMANCE in percentage of span

**Setpoint accuracy:**  $\pm 0.5$  %

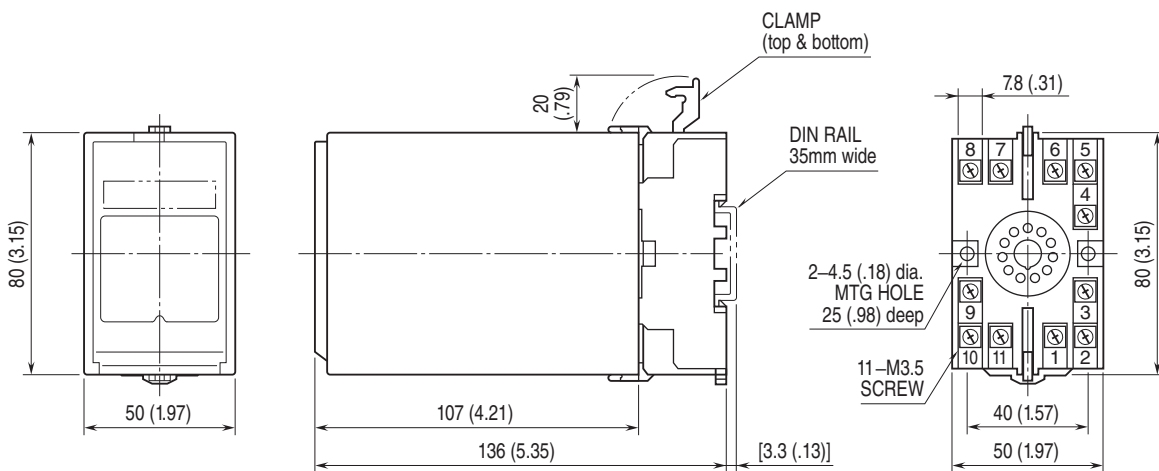
**Trip point repeatability:**  $\pm 0.05$  %

**Temp. coefficient:**  $\pm 0.015$  %/°C ( $\pm 0.008$  %/°F)

## EXTERNAL VIEW

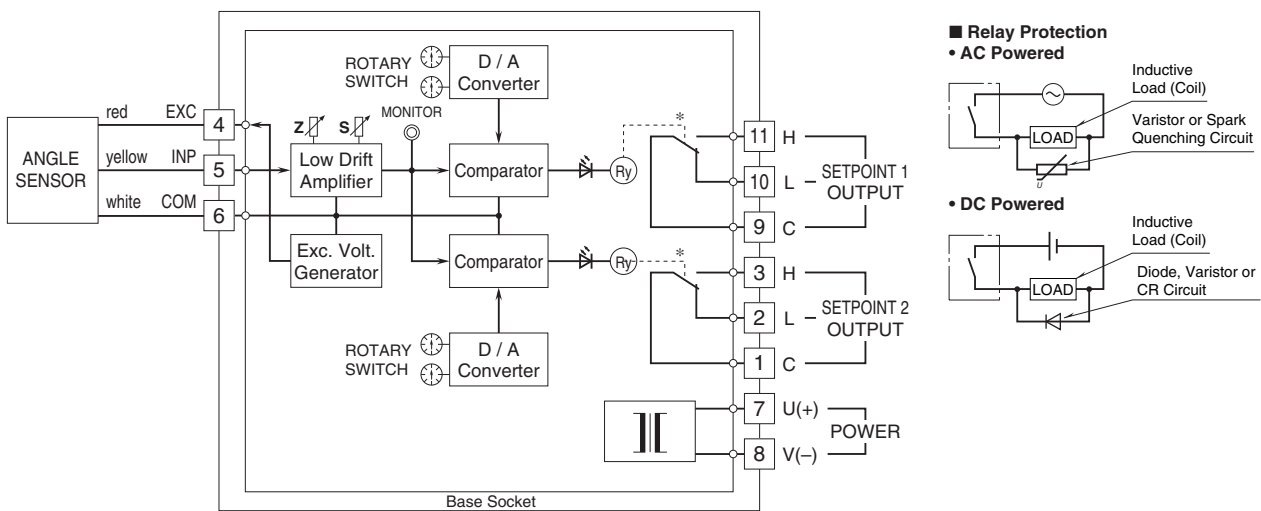


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



• When mounting, no extra space is needed between units.

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



\*Relay status for output codes "1" & "4", at power OFF.



Specifications are subject to change without notice.